〔Chem. Pharm. Bull., **36**, 3753 (1988)〕

Spectroscopic Study of Hydrophobic Interaction of Heterocyclic Amine *N*-Oxides with Cyclodextrins.

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Electronic spectra of aromatic amine *N*-oxides show a marked blue shift with the change of solvent polarity from aprotic solvents to protic ones. This is very useful to examine the hydrophobic interaction between the amine *N*-oxides and cyclodextrins (CyD). Among the various system studied a typical example is the system of 4-nitroquinoline *N*-oxide (4NQO) and 2,6-di-*O*-methyl-*β*-CyD. A clear red shift of the UV spectrum of 4NQO was observed upon inclusion complex formation, indicating directly that the CyD cage environment is much more hydrophobic than in water. Thermodynamic and spectroscopic constants pertinent to those inclusion complex formations were evaluated and the results are discussed in relation to the complex formation mechanism.

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Determination of Carbaryl by High-Performance Liquid Chromatography with Electrochemical Detection.

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A sensitive, selective, and simple HPLC method for determination of carbaryl, an extensively used broad-spectrum insecticide, has been reported. In this procedure, carbaryl in a sample solution (1.0 ml) was hydrolyzed with 0.2 ml of 0.2M NaOH (10min., 25°C) to yield electrochemically active 1-naphthol. After acidification with 0.25 ml of 0.2 M HCl containing 2-naphthol as an internal standard, an aliquot was introduced into a reversed-phase HPLC system (Develosil ODS column) with electrochemical detection at 0.75 V *vs.* Ag/AgCl. The calibration curve exhibited a good linearity with correlation coefficient 0.9972 in the range of 40-200 μg/ml and the detection limit was 1.5 ng/ml with 20 μl injection.

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Special Features of Stable Free Radical Formation on Plasma-irradiated *α*-D-Glucose Studied by ESR Spin Trapping Technique.

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The structure of the stable free radicals produced in argon plasma-irradiated *α*-D-glucose was characterized by the ESR spectral meaurements of the spin adducts obtained from reactions with 2,4,6-tri-t-butyl-nitrosobenzene (BNB) with the aid of computer simulations. It was found that the spectra consisted of a mixture of three nitroxide spin adducts trapped by primary alkyl, hydroxylalkyl and secondary alkyl radicals, and N-alkoxyanilino radical trapped by tertiary alkyl radical.